

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number
WO 2005/061400 A1

(51) International Patent Classification⁷: C03B 29/04

(21) International Application Number: PCT/IB2004/004069

(22) International Filing Date: 10 December 2004 (10.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

0328917.0 12 December 2003 (12.12.2003) GB

60/529,746 17 December 2003 (17.12.2003) US

0419839.6 7 September 2004 (07.09.2004) GB

60/610,223 16 September 2004 (16.09.2004) US

(72) Inventors; and

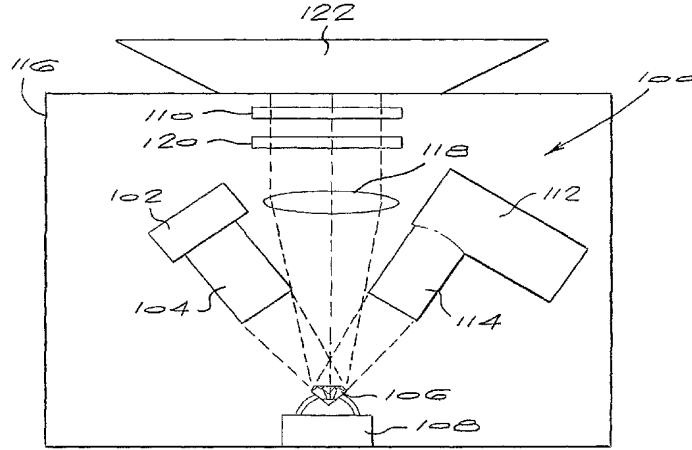
(75) Inventors/Applicants (for US only): TWITCHEN, Daniel, James [GB/GB]; 10 Park Drive, Sunningdale Berkshire SL5 0BD (GB). SCARSBROOK, Geoffrey, Alan [GB/GB]; 40 Cavendish Mead, Sunninghill, Ascot Berkshire SL5 9TD (GB). MARTINEAU, Philip, Maurice [GB/GB]; Littlewick End, Coronation Road, Littlewick Green Berkshire SL6 3RA (GB). SPEAR, Paul, Martyn [GB/GB]; 44 Brompton Drive, Pinkneys Green, Maidenhead, Berkshire SL6 6SP (GB).

(74) Agents: DONALD, Heather, June et al.; Spoor & Fisher, P. O. Box 41312, Craighall, 2146 Morningside (ZA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: METHOD OF INCORPORATING A MARK IN CVD DIAMOND



(57) **Abstract:** A method of incorporating a mark of origin, such as a brand mark, or fingerprint in a CVD single crystal diamond material, includes the steps of providing a diamond substrate, providing a source gas, dissociating the source gas thereby allowing homoepitaxial diamond growth, and introducing in a controlled manner a dopant into the source gas in order to produce the mark of origin or fingerprint in the synthetic diamond material. The dopant is selected such that the mark of origin or fingerprint is not readily detectable or does not affect the perceived quality of the diamond material under normal viewing conditions, but which mark of origin or fingerprint is detectable or rendered detectable under specialised conditions, such as when exposed to light or radiation of a specified wavelength, for example. Detection of the mark of origin or fingerprint may be visual detection or detection using specific optical instrumentation, for example.

WO 2005/061400 A1



(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— with international search report